

WHAT IS CLAIMED IS:

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1. A 3D video game machine, comprising:

a monitor provided at a specified height position of a casing of the game machine for displaying images,

a game control unit for controlling the progress of a game,

a display control unit for generating a 3D image viewed from a viewing point of a simulated camera and displaying it on a screen of the monitor,

head detecting means for detecting at least a position of the head of a game player located in a play area before the screen of the monitor in at least one linear direction in a 3D space, and

viewing point changing means for moving the viewing point of the simulated camera to follow a displacing direction and a displacing amount of the detected position of the head.

2. A 3D video game machine according to claim 1, further comprising an externally operable operation unit, wherein the game control unit causes operation contents from the operation unit to be reflected on the progress of the game.

3. A 3D video game machine according to claim 1, wherein the head detecting means includes a sheet-shaped pressure sensor for detecting positions of both feet of the game player in at

least one direction on a horizontal plane, and a head position determining means for determining a position of the head in at least one direction on the horizontal plane based on the detected position information of the feet.

4. A 3D video game machine according to claim 3, wherein the head detecting means further includes a distance measuring sensor for remotely detecting a height position of the head.

5. A 3D video game machine according to claim 3, wherein the pressure sensor is an analog sensor, and the head position determining means calculates a center of gravity position of the detected feet based on their detection levels and determining the position of the head in at least one direction on the horizontal plane using the obtained center of gravity position information and feet position information.

6. A 3D video game machine according to claim 1, wherein the head detecting means further includes a distance measuring sensor for remotely detecting at least one of a height position and a transverse position of the head.

7. A 3D video game machine according to claim 6, wherein the distance measuring sensor includes one propagation medium transmitter, a first and a second propagation medium receivers

arranged in two positions along the transverse direction of the screen of the monitor at the opposite sides of the propagation medium transmitter and adapted to receive propagation mediums transmitted from the propagation medium transmitter and reflected by the game player's head, and the head detecting means includes a head position determining means for determining the position of the head of the game player based on lapses of time from a point of time of transmission to reception by the first and second propagation medium receivers.

8. A 3D video game machine according to claim 1, wherein the head detecting means includes a position detecting sensor for detecting a three-dimensional position of the head and the position detecting sensor includes one propagation medium transmitter, at least three propagation medium receivers located around the propagation medium transmitter and in different positions on a horizontal plane and adapted to receive propagation mediums transmitted from the propagation medium transmitter and reflected by the game player's head and a head position determining means for determining a position of the game player's head in the 3D space based on lapses of time from a point of time of transmission to reception by the first and second propagation medium receivers.

9. A 3D video game machine according to claim 6, wherein

the distance measuring means includes a plurality of propagation medium transmitting and receiving devices arranged in a linear direction on a horizontal plane located above the play area and faced downward, and the head detecting means includes a head position determining means for determining a position and a height of the game player's head in the linear direction based on elapses of time from transmission to reception of propagation mediums by the respective propagation medium transmitting and receiving devices.

10. A 3D video game machine according to claim 1, wherein the head detecting means includes an optical image pickup means and a head image extracting means for extracting an image of the game player's head from a picked image.

11. A 3D video game machine according to claim 10, further comprising a member having a background deleting surface provided at a side of the play area opposite from the image pickup means.

12. A 3D video game machine according to claim 1, wherein the head detecting means includes an infrared camera, an infrared emitting member fittable on the game player's head, and a head image extracting means for extracting an image of the game player's head from an image obtained by receiving infrared

rays from the infrared emitting member.

13. A 3D video game machine according to claim 12, wherein a member having an infrared ray absorbing surface is provided at a side of the play area opposite from the infrared camera.

14. A 3D video game machine according to claim 12, wherein a member having an infrared ray reflecting surface is provided at a side of the play area opposite from the infrared camera.

15. A method for controlling a movement of a viewing point of a simulated camera in a 3D video game executed in a 3D video game machine comprising a monitor provided at a specified height position of a casing of the game machine for displaying images and a game control unit for controlling the progress of a game, the method comprising the steps of:

generating a 3D image viewed from a viewing point of a simulated camera and displaying it on a screen of the monitor;

obtaining a position information of a game player's head by causing head detecting means to repeatedly detect a position of the head of the game player standing in a play area before the screen of the monitor in at least one linear direction in a 3D space, and

moving the viewing point of the simulated camera to follow a displacing direction and a displacing amount of the detected position of the head.